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THE TREE ANTS (*DENDROMYRMEX*) OF SOUTH AND CENTRAL AMERICA

Dendromyrmex is one of the very few neotropical genera of Formicinae, the subfamily which includes those ants lacking a sting and with an anal circlet of hairs such as *Formica* and *Camponotus*. The ants are rarely recorded and practically nothing has been published on their habits. Wheeler ('16) briefly notes that *Dendromyrmex fabricii* had a "small carton nest on the under side of a leaf." Emery ('25) notes that *D. chartifex* "construit un nid en carton sur les arbres." The nests, however, have never been figured.

The ants are of *Formica* size and distinguished by their strongly convex eyes, occipital region sometimes constricted behind as a "neck" and thorax almost evenly convex in profile. They resemble some medium-sized *Camponotus* workers but are not polymorphic and the eyes are much more strongly convex. The known range extends from Honduras to Bolivia and the ants are characteristic inhabitants of the tropical rain forests.

In Panama, British Guiana and Surinam I was fortunate in finding these ants a few times and examined their nests. They belonged to three species and represented three new subspecies which had to be described, (Weber, '43). These are all new records for the species and the ants had not previously been recorded from Surinam. Observations on the individual colonies are recorded below under the different subspecies but may be summarized as follows:

The ants are arboreal and form nests of carton. The female, after losing her wings, builds a small nest, sometimes like that of certain birds (*Icterus*), tubular with an opening on one side near the top, and making a crude carton in which large plant fibers may easily be distinguished (figure 1). The nests are built on the under side of leaves some feet above ground. The workers build a much larger nest of a finer carton on the under side of leaves. All nests found were at heights of five to six and one-half feet above the ground but the ants doubtless have a greater altitudinal range. The ants use a variety of leaves for the support of the nest, including palms, Mora, Greenheart, *Gugelia neglecta*, *Hirtella paniculata* and an unidentified vine. The ants exhibit plasticity in building habits. A female may build a nest by herself or cooperate with other females, probably colony mates. This initial nest is symmetrically formed and in several examples is barely large enough for the one ant. Upon the maturing of successive broods the workers form a new nest or enlarge the old and also develop a more finely comminuted carton. At least several species are nocturnal. The ants bite but are not aggressive. They may stand erect on their long legs when disturbed and hold the gaster (abdomen) at right angles to the rest of the body or they may beat the body against the carton nest, producing a sound like pattering rain.

Dendromyrmex chartifex F. Smith (figure 3).—

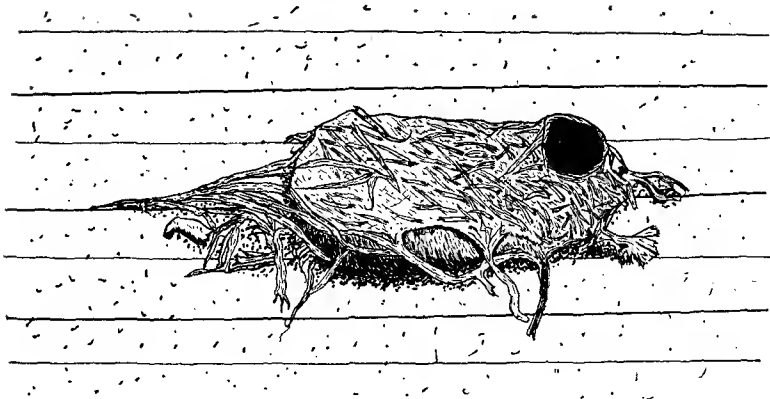


FIG. 1. Nest constructed by a female of *Dendromyrmex fabricii isthmicus* Weber for her first brood. The nest was on the under side of a palm leaf whose parallel veins were conspicuous. Barro Colorado Island, Panama Canal Zone.

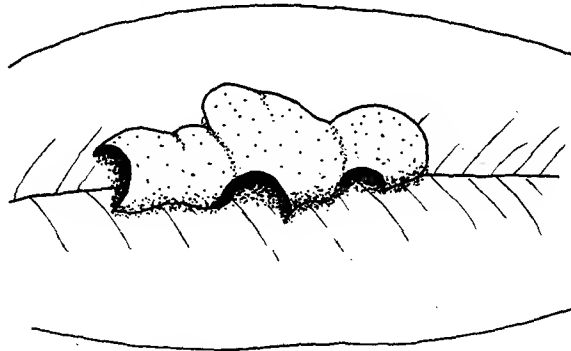


FIG. 2. Nest with three cells and entrances constructed by a colony of *Dendromyrmex fabricii niger* Weber on the under side of a leaf of *Mora* (*Mora excelsa* Benth.). From a sketch made in the field. Courantyne River, Surinam.

A worker was taken on Barro Colorado Island, Panama Canal Zone, June 12, 1938 as it fled, carrying a cocoon, from a marauding file of army ants (*Eciton burchelli* West.). The army ants were crossing a stream with their booty by following up an inclined tree and palm fronds, the file attaining a height of nine feet above the stream. The *Dendromyrmex* probably was driven from its nest in a palm frond but may have nested higher in trees. In life it appeared to have large white eyes but this was due to the white spot on the cheek in front of each eye.

A nest was found at the edge of the clearing in rain forest of the Forest Settlement, Mazaruni River, British Guiana, August 22, 1935 (figure 3). The nest was at a height of six feet in a tree, *Hirtella paniculata* (Rosaceae). When found it was appressed to the top of live leaves but on top of the nest dead leaves were attached which may have represented the original roof of the

nest. The attachment to live leaves forming the floor to the nest may have been secondary, upon the withering of the lower leaves. There were two entrances towards the apical end of the leaf, one surrounding a dead twig which had evidently dropped down from above. A nearby leaf contained an abandoned and damaged nest. The ants were found to be nocturnal, numbers being out on the nest and leaves at night. The brood recovered consisted of cocoons containing pupae which had pigmented eyes and mandibular margins, and larvae, the latter covered densely with a fur of long, fine, multifid (trifid, quadrifid, etc.) or simple hairs. On the same species of plant but about 15 feet away was a colony of *Dolichoderus* appearing somewhat similar. The ants, however, stuck together with carton live leaves and were somewhat less nocturnal.

A nest (No. 493) which Dr. G. C. Wheeler



FIG. 3. Nest with two entrances constructed by a colony of *Dendromyrmex chartifex* F. Smith on a leaf of the tree, *Hirtella paniculata*. Originally the nest had probably been formed on the under side of a leaf whose withered remnants are now incorporated in the top of the nest. Remains of a damaged nest appear on a leaf above the inhabited nest. Mazaruni River, British Guiana.

collected in Panama City, Panama, July 7, 1924 he stated to me probably belonged to four females (No. 420), representatives of which had been determined by F. Santschi as this species. Both field note numbers carried the same date, locality, and "four females in incipient nest" data, and probably dealt with the same collection. There are no other data but the preserved nest, now damaged, is about 20×30 mm. with a height between 5 and 10 mm. The proximal part is much damaged but appeared to enclose the entrance. The nest is of long, thin plant fibers loosely compacted so that there are many spaces. Another nest (No. 401) taken by Dr. Wheeler at the same time and place was recorded as containing one female. There are no other data but the dried nest is now ovate, 13×26 mm. with a height of approximately 5 mm. and has a single entrance, proximal with respect to the leaf. The margins are attached to what

seems to be the mid-rib and a side-rib which curves back towards the middle to enclose an ovate area. The carton consists of a framework of long, slender fibers with fine material in the interstices. Both nests appeared to be on the underside of leaves, perhaps of the same species of plant, but the smaller nest was much more compact.

Dendromyrmex fabricii Roger, *ssp. niger* Weber (figure 2).—*D. niger* is known from the single colony which I found in dense Mora forest (*Mora excelsa* Benth.) on the Surinam side of the Courantyne River and about 50 miles upstream from the village of Hapseba July 9, 1936. The forest was a practically pure stand of Mora, the trees being of large size. The ground was littered with their large fruit and the undergrowth consisted of young seedlings and saplings. The soil was a white clayey sand. *Odontomachus haematoda* L. was perhaps the dominant ant of the forest floor, *Stenomyrmex emarginatus* (Fabr.) was in a rotted cavity in a small tree at a height of five feet while *Azteca* sp. and *Dolichoderus* (*Monacis*) *bispinosus* Oliv. appeared to be the dominant arboreal ants. The *Dendromyrmex* nest was appressed to the under side of a leaf 210×67 mm. at a height of five feet on a Mora sapling.

The nest was 78 mm. in maximum length, from 18 to 31 mm. in width, and 6 mm. in maximum height. There were three openings, 7, 11 and 4 mm. wide, the 11 mm. opening being median. Each opening was an entrance to a cell walled off completely from the others. The cell with the smallest opening was distal with respect to the leaf base and appeared to be the oldest. The nest was made of silky gray carton, very thin yet strong. On this plant fibers and small bits of vegetal debris were stuck, rendering the nest more inconspicuous. Nearly the entire under surface of the leaf was similarly dotted with bits of debris, causing the nest to merge still more into the background. An insect or other animal had eaten into the margin of the leaf but not sufficiently to endanger the nest.

Dendromyrmex fabricii Rog., *ssp. isthmicus* Weber (figure 1).—Two females were taken on Barro Colorado Island, Canal Zone June 28 and 29, 1938 in separate nests. Both were in heavy rain forest and on the underside of palm fronds at heights of six and six and one-half feet above the ground. The nest figured was a cylinder 19×9 mm. with extensions at the ends making a total length of carton of 32 mm. The circular opening was 4 mm. and was proximal in position. The second nest was smaller, being about one centimeter long and equally wide. The proximal end had a large entrance. The female was working on the nest but unfortunately there was no time for further study. The carton was of plant debris of variable sizes and disintegrated in a vial of alcohol where it was hurriedly placed. She

had evidently not started her brood as none was found.

Dendromyrmex apicalis Mann, ssp. filiae Weber.—Four nests of this new subspecies were taken in virgin Greenheart forest (*Ocotea Rodioei* (Schomb.) about four miles from the Forest Settlement, Mazaruni River, British Guiana August 23, 1935. The ants of three nests, however, were nesting in another tree, *Guguetia neglecta* (Anonaceae), called by the Arawak Indians "yariyari." The tree was probably about 75 feet high and was dwarfed by the magnificent Greenheart. As this particular forest was that month being selectively cut by the Forestry Department, it will no longer be the virgin climax type it then was. It may then be that the *Dendromyrmex* will move out, like *Paraponera clavata* leaves disturbed rain forest here.

The nests occurred at a height of about 15 feet and were on the underside of the *Guguetia* leaves. The nests were uniform in structure and each had two entrances facing the leaf petiole. One nest was attached to the distal portion of a leaf 17 cm. long for a distance of 9 cm. although because of the narrowness of the leaf only the proximal 7 cm. was used. The nest was 4.5 cm. in maximum width and 3–5 cm. high. The carton was of even texture and consisted of vegetal debris and plant fibers mostly finer than cotton. The leaf surface forming the ceiling was covered with a thin film of carton. When the nest was cut down the ants stood rigidly erect on their legs, with the gaster (abdomen) erected perpendicularly at right angles to the remainder of the body like *Crematogaster*. Appearing jet-black, they contrasted sharply with the buff-gray carton. The ants of a second nest reacted somewhat differently. When I started to pick them up they beat their bodies rapidly against the leaf with legs outspread, producing exactly the sound of workers of the carton-making *Camponotus senex* as they similarly drum against their nest when disturbed. The sound reminds one of the pattering of raindrops. The latter nest, being larger and more complexly cellular,

produces more resonance. The *Dendromyrmex* of all nests bit freely when picked up but the bites were relatively ineffectual and the ants did not rush to attack. The brood of the nests consisted of elliptical white eggs 1.07×0.51 mm., larvae covered with dense, fine, multifid hairs and white cocoons containing mature larvae or unpigmented pupae.

The ants of the fourth nest nested on the underside of a small leaf of a vine attached to a sapling and at a height of six feet. The nest strongly resembled those above and similarly had two entrances.

The Nest of Another Arboreal Ant (Neoponerinae).—Ants of the subfamily Ponerinae are the most primitive of ants. They form the most simple nests, cavities in the ground or in rotted wood. This is the accepted habit for ants of the ponerine genus *Neoponerina*, widespread from Texas to Argentina. On December 22, 1934, however, I found a *Neoponerina* colony in Trinidad, B. W. I. (Guayaguayare Bay), which formed a nest remarkable for a ponerine and foreshadowing the carton nest of the higher ants. The nest was at a height of several feet on a small tree, locally called Balsa or Bois flot (*Ochroma pyramidale* (Cav.) Urb.) of the Bombacaceae. The trunk of this young tree was covered with long, multifid hairs. The ants had formed a crude carton of agglutinated hairs to make a nest appressed to the trunk. Brood was kept in the several chambers so formed.

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